

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Wagner, et al.	Group Art Unit:
Application No.:	Examiner:
Filed:	
Title: REACTIVE DYE PRINTING PROCESS	
Attorney Docket No.: 321.074-CON1	

**PRELIMINARY AMENDMENT**

Box Patent Application  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

By way of Preliminary Amendment, applicant wishes to amend the application as follows:

**In the Title:**

Please cause the title to read as follows: REACTIVE DYE PRINTING PROCESS.

**In the Specification:**

Please cause the following paragraph to be inserted on the top of page 2.

--This application is a continuation of pending application serial number 09/322,737, filed May 28, 1999, which has been allowed. --

**In the claims:**

10. A method of printing an image using a digital printer, comprising the steps of:

- a. preparing an ink that comprises at least one heat-activated printing additive that is solid at ambient temperature, wherein said at least one heat-activated printing additive has a melting point that is lower than a heat activation temperature, and at least one reactive dye which dissolves in said printing agent when said printing agent is a liquid, and at least one alkaline agent;
- b. supplying a digital printer with said ink and printing a portion of said ink onto a substrate to form an image by means of said portion of said ink;
- c. heat activating said ink by applying heat to said substrate at or above said heat activation temperature and melting said heat-activated printing additive, wherein said portion of said ink reacts with said substrate and bonds said image to said substrate.

- 11. A method of printing an image using a digital printer as described in claim 10, wherein said image is transferred to a second substrate when heat is applied to said substrate, and wherein said portion of said ink reacts with said second substrate and bonds said image to said second substrate.
- 12. A method of printing an image using a digital printer as described in claim 10, wherein said heat activation temperature is not lower than 70° C.
- 13. A method of printing an image using a digital printer as described in claim 11, wherein said heat activation temperature is not lower than 70° C.

14. A method of printing an image using a digital printer as described in claim 10, wherein said ink is heat activated by applying steam.
15. A method of printing an image using a digital printer as described in claim 11, wherein said ink is heat activated by applying steam.
16. A method of printing an image using a digital printer as described in claim 10, wherein said heat activated printing additive is urea.
17. A method of printing an image using a digital printer as described in claim 11, wherein said heat activated printing additive is urea.
18. A method of printing an image using a digital printer as described in claim 10, wherein said ink further comprises a binder, and wherein said binder prevents material reaction of said at least one reactive dye prior to heat activation of said ink.
19. A method of printing an image using a digital printer as described in claim 11, wherein said ink further comprises a binder, and wherein said binder prevents material reaction of said at least one reactive dye prior to heat activation of said ink.

20. A method of printing an image using a digital printer as described in claim 10, wherein said substrate comprises fibers.
21. A method of printing an image using a digital printer as described in claim 11, wherein said second substrate comprises fibers.
22. A method of printing an image using a digital printer as described in claim 10, wherein said ink further comprises thermally expandable microcapsules.
23. A method of printing an image using a digital printer as described in claim 11, wherein said ink further comprises thermally expandable microcapsules.
24. A method of printing an image using a digital printer as described in claim 22, wherein said thermally expandable microcapsules have a diameter of 20 microns or less.
25. A method of printing an image using a digital printer as described in claim 23, wherein said thermally expandable microcapsules have a diameter of 20 microns or less.

Please delete claims 1-9.

Respectfully submitted,



---

B. Craig Killough  
Attorney for Applicant  
Registration Number 30,398  
134 Meeting Street  
P.O. Drawer H  
Charleston, SC 29402  
(843) 577-7700

February 5, 2002

## VERSIONS WITH MARKINGS TO SHOW CHANGES MADE

### **In the Title:**

The title has been amended as follows: DIGITAL PRINTABLE REACTIVE DYE PRINTING AND PROCESS.

### **In the Specification:**

In the Specification, on the top of page 2, the following paragraph has been inserted:

--This application is a continuation of pending application serial number 09/322,737, filed May 28, 1999, which has been allowed. --

### **In the Claims:**

Claims 10-25 have been added as follows:

10. A method of printing an image using a digital printer, comprising the steps of:
  - a. preparing an ink that comprises at least one heat-activated printing additive that is solid at ambient temperature, wherein said at least one heat-activated printing additive has a melting point that is lower than a heat activation temperature, and at least one reactive dye which dissolves in said printing agent when said printing agent is a liquid, and at least one alkaline agent;
  - b. supplying a digital printer with said ink and printing a portion of said ink onto a substrate to form an image by means of said portion of said ink;

c. heat activating said ink by applying heat to said substrate at or above said heat activation temperature and melting said heat-activated printing additive, wherein said portion of said ink reacts with said substrate and bonds said image to said substrate.

11. A method of printing an image using a digital printer as described in claim 10, wherein said image is transferred to a second substrate when heat is applied to said substrate, and wherein said portion of said ink reacts with said second substrate and bonds said image to said second substrate.

12. A method of printing an image using a digital printer as described in claim 10, wherein said heat activation temperature is not lower than 70° C.

13. A method of printing an image using a digital printer as described in claim 11, wherein said heat activation temperature is not lower than 70° C.

14. A method of printing an image using a digital printer as described in claim 10, wherein said ink is heat activated by applying steam.

15. A method of printing an image using a digital printer as described in claim 11, wherein said ink is heat activated by applying steam.

16. A method of printing an image using a digital printer as described in claim 10, wherein said heat activated printing additive is urea.
17. A method of printing an image using a digital printer as described in claim 11, wherein said heat activated printing additive is urea.
18. A method of printing an image using a digital printer as described in claim 10, wherein said ink further comprises a binder, and wherein said binder prevents material reaction of said at least one reactive dye prior to heat activation of said ink.
19. A method of printing an image using a digital printer as described in claim 11, wherein said ink further comprises a binder, and wherein said binder prevents material reaction of said at least one reactive dye prior to heat activation of said ink.
20. A method of printing an image using a digital printer as described in claim 10, wherein said substrate comprises fibers.
21. A method of printing an image using a digital printer as described in claim 11, wherein said second substrate comprises fibers.



22. A method of printing an image using a digital printer as described in claim 10, wherein said ink further comprises thermally expandable microcapsules.
23. A method of printing an image using a digital printer as described in claim 11, wherein said ink further comprises thermally expandable microcapsules.
24. A method of printing an image using a digital printer as described in claim 22, wherein said thermally expandable microcapsules have a diameter of 20 microns or less.
25. A method of printing an image using a digital printer as described in claim 23, wherein said thermally expandable microcapsules have a diameter of 20 microns or less.

**CERTIFICATE OF MAILING**

I hereby certify that this Preliminary Amendment is being filed via Express Mail EL908892135US in an envelope addressed to: Assistant Commissioner of Patents, Box Patent Application, Washington, D.C. 20231, on this 5 day of February, 2002.

*Christine Santelli*

---

Christine Santelli, Paralegal  
to B. CRAIG KILLOUGH  
Attorney for Applicant  
134 Meeting Street  
Charleston, SC 29401  
(843) 577-7700